Attention Deficit Hyperactivity Disorder

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Attention Deficit Hyperactivity Disorder[1]

In almost every classroom in Kansas, one or more students are present who experience serious difficulty with inattention, impulsivity, and hyperactivity. School personnel find them to be difficult to teach because they do not respond in the same way as other students and are often disruptive. The students themselves are at risk for major academic and social failure unless they are managed appropriately. Clearly, these students whose condition is referred to as Attention Deficit Hyperactivity Disorder (ADHD) present challenges which must be met.

The condition which today is termed attention deficit hyperactivity disorder (ADHD) has been recognized as an entity for more than 50 years. In the middle of the twentieth century such students were listed as "brain damaged" or brain injured. In the early 1960's, the term "minimal brain damage" was in common use. Hyperactive became the term of choice for many professionals in the mid 1960's. It was not until the 1970's that it became clear that inattentiveness and impulsivity were also central to the problem.

The underlying cause of ADHD is not understood. Recent research indicates that the disorder may have a genetic link and may be related to a biochemical imbalance in the brain. However, the exact cause of ADHD in any specific student can not be pinpointed, in most cases.

I. Definition

The current definition of ADHD, according to DSM IV (1994), is "a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent than is typically observed in individuals at a comparable level of development". These symptoms are manifested in academic, occupational, and/or social situations. Most individuals are thought to have symptoms of both inattention and hyperactivity-impulsivity. However, some individuals may have symptoms that are predominantly inattention or predominantly hyperactivity-impulsivity. The predominant pattern of symptoms over the past six months provides the basis for determining the subtype of ADHD. The three subtypes include:

- Combined Type - used when six or more symptoms of inattention and six or more symptoms of hyperactivity-impulsivity have persisted for at least six months.
- Predominantly Inattentive Type - used when six or more symptoms of inattentiveness, but fewer than six symptoms of hyperactivity-impulsivity have persisted for at least six months.
- Predominantly Hyperactive-Impulsive Type - used when six or more symptoms of hyperactivity-impulsivity, but fewer than six symptoms of inattentiveness have persisted for at least six months. However, inattention may often still be a significant feature.

The diagnostic criteria for ADHD is based upon the following observable characteristics:

A. Either 1 or 2:

1. Six or more of the following symptoms of inattention have persisted for at least six months to a degree that it is maladaptive and inconsistent with the developmental level:

- Often fails to give close attention to details or makes careless mistakes in school work, work, or other activities.
- Often has difficulty sustaining attention in tasks or play activities.
- Often does not listen when spoken to directly.
- Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions).
- Often has difficulty organizing tasks and activities.
- Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework).
- Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books).
- Is often distracted by extraneous stimuli.
- Is often forgetful in daily activities.

2. Six or more of the following symptoms of hyperactivity/impulsivity have persisted for at least six months to a degree that is maladaptive and inconsistent with the developmental level:

Hyperactivity

- Often fidgets with hands or feet or squirms in seat.
- Often leaves seat in classroom or in other situations in which remaining seated is expected.
- Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents and adults, may be limited to subjective feelings of restlessness).
- Often has difficulty playing or engaging in leisure activities quietly.
- Is often "on the go" or often acts as if "driven by a motor".
- Often talks excessively.

Impulsivity

- Often blurts out answers before questions have been completed.
- Often has difficulty awaiting a turn.
- Often interrupts or intrudes on others (e.g., butts into conversations or games).

B. Some hyperactive, impulsive or inattentive symptoms that caused impairment were

present before seven years of age.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school or work or home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder, and are not better accounted for by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, or a personality disorder).

It is important to realize that students with ADHD may have other handicapping conditions, although many students have ADHD alone. All students with inattention, hyperactivity, and impulsivity do not have ADHD. It is required that a comprehensive evaluation occur. Generally this evaluation will include interviews with lawful custodians and the student and observations of the student in school. Rating scales from both the lawful custodians and educators are used in this process. In addition, psycho educational testing is useful in the evaluation of students with inattention, hyperactivity, and impulsivity to rule out specific medical syndromes, neurologic disorders, pervasive developmental disorders, sensory deficits, and any other medical conditions. Psychological evaluation can help evaluate for other possible conditions or co-morbidities, such as conduct disorder, oppositional defiant disorders, anxiety, depression, adjustment reaction, obsessive-compulsive disorder, family dysfunction, or poor environmental fit.

II. Management

The treatment of ADHD should consist of a partnership which includes the student, lawful custodians, appropriate school personnel, and the health care provider. Successful treatment of ADHD includes the fostering of normal development as well as interventions directed at removing the problematic behaviors and diagnosing and treating associated problems. Fostering normal development includes educating the student, his/her family, teachers, and peers about ADHD.

A. Pharmacotherapies/Psychostimulants

Psychopharmocologic agents should be used only as *one* part of a well thought out treatment plan and *only* after the diagnosis of ADHD has been vigorously *confirmed.* Three stimulant medications account for the vast majority of pharmocologic agents used for ADHD. The three medications include: methylphenidate (Ritalin), pemoline (Cylert), and dextroamphetamine (Dexedrine). These medications are effective in at least 75% of all students who meet the diagnostic criteria for ADHD. Stimulant medications have been found to improve cognitive effects. They have been shown in the laboratory to improve measures of inattention and distractibility, short term

memory, and fine motor output. Students treated with stimulant medication have been shown to significantly improve in classroom functioning with reduced negative and off task behavior. In turn, teachers have been found to increase their level of positive response to these students. Several studies have indicated that stimulants improve interpersonal interactions and peer perceptions of students with ADHD. The following chart provides a summary of the three medications.

Generic Name (Trade Name)	**Onset of Action**	**Advantages/Disadvantages in Comparison to Ritalin**
Methylphenidate Hydrochloride *(Ritalin)*	Effects occur quickly. Typically begins to take effect within 30 minutes, and reaches peak levels in 2 to 3 hours.	Usually given around breakfast so that it exerts its effect when student is involved in schoolwork. Lasts 4 to 6 hours, therefore student usually requires another dose at lunch time. Best to schedule heavier academic load for A.M. when student's attentional processes should be maximal.
(Ritalin-SR)	slow release Ritalin	Given at breakfast. Dose at lunch time not needed.
Pemoline *(Cylert)*	Given once a day in the morning.	Medication's full effects can not be seen for several days or weeks, and once it is stopped it remains in the system for several more days, therefore it is more difficult to evaluate how much of a change in behavior is due to the medication.
Dextroamphetamine *(Dexedrine)*	Taken earlier in the A.M. than Ritalin because it is absorbed at half the rate of Ritalin.	Equally as effective as Ritalin, however its reputation as the often abused street drug "speed" makes it considered less often than Ritalin.

1. Side Effects of Stimulants

The most common side effects of stimulants are loss of appetite and difficulties in sleeping. Other side effects which may occur are headaches, stomachaches, irritability, decreased appetite which causes changes in weight gain, anxiety, excessive sadness, social withdrawal, dizziness, exacerbation of tics or Tourette's Syndrome, and mildly elevated heart rate and systolic blood pressure. Psychostimulants are no longer thought to have an effect on lowering seizure threshold. The risk for later drug use or abuse is not increased in students who use appropriate regimes of psychostimulant medications for medical reasons.

2. Other Medications Used In Treating ADHD

Other medications used in treating ADHD include tricyclic antidepressants, such as Imipramine. They are used in students who have a contraindication to the use of psychostimulants or who have a medical condition that suggests use of antidepressants, such as depression. Students using tricyclic antidepressants should be monitored closely. They should have a baseline and follow up electrocardiogram (EKG).

Another alternative treatment for ADHD is Clonidine (Catapres). The overall response rate for Clonidine is about 70% in students with ADHD. Clonidine seem particularly useful for a group of students with ADHD who have hyper-aroused or aggressive tendencies. The major limiting side effect of Clonidine is somnolence or drowsiness. The somnolence is often transient. Blood pressure should be monitored carefully. Clonidine can be administered by a transdermal patch system that can be used once every five to seven days.

A combination of the above medications are sometimes used. It is very important that the student receiving combination medications be closely monitored and observed for any known/unknown potential side effects associated with combination therapy. In addition, there should be close communication between the lawful custodians, school, and primary health care provider.

B. Controversial Therapies

Controversial therapies for ADHD include:

- Feingold's diet which removes food additives and salicylates (as in aspirin)
- Reduction of sugar in the student's diet
- Removal of food that the student is allergic to
- Megavitamin therapy
- Special lighting
- Biofeedback training

To date, none of these therapies have been proven to be effective. It is important to note that they should never be used without appropriate medical direction.

C. School Based Interventions

The teacher's attitude toward the student with ADHD is crucial for educational success. An understanding of the disorder encourages acceptance and facilitates utilizing appropriate interventions. Attention to medication side effects is important along with **open communication** lines between lawful custodians, and other professionals. Other classroom interventions include making modifications -

environmentally, instructionally, behaviorally, and socially (see accommodations listed on the following page). Additionally, a more specific behavior management program may be required along with consultation and support from special education personnel.

Environmental:

- Seat in quiet area
- Seat near good role model
- Increase distance between desks
- Allow student to stand while working
- Provide notebook with dividers
- Reward neatness of desk/area; do not punish sloppiness
- Use tape recorder instead of writing notes, assignments, or homework
- Allow for frequent breaks to walk or stretch
- Structure a similar routine for every day
- Seat nearest to teacher
- Colorize subjects with folders and/or notebooks

Instructional:

- Allow extra time to complete tasks
- Shorten assignments
- Break long assignments into smaller parts; give assignments one at a time
- Reduce amount of homework; require fewer correct responses; pair written and oral instructions
- Peer assistance in note taking
- Remind students to recheck work
- Review instructions and directions frequently
- Avoid oral reading in front of class if difficult area for student
- Accept oral responses
- Accept use of word processor or typewriter
- Limit quantity of written work
- Accept use of calculator
- Provide immediate feedback
- Model math and writing processes
- Read to the student frequently
- Highlight relevant information
- Use timer to set limit for task completion
- Limit the amount of work on one page
- Vary test responses
- Provide hands on approach to learning
- Provide information in small steps
- Break tasks down into small steps
- Review information frequently and provide repetition

- Summarize key points; provide student a copy of lecture notes
- Use outlining, webbing, and visual diagrams
- Practice dictation
- Illustrate vocabulary
- Verbalize steps in the process; talk slower when giving directions
- Provide wait time for response to questions
- Use graph paper for math assignments
- Adjust type, difficulty and sequence of material required

Behavioral:

- Encourage self-monitoring
- Provide visual charts
- Post simply and clearly written rules
- Provide cues and prompts as reminders
- Ignore minor inappropriate behavior
- Increase immediacy of rewards and consequences
- Provide visual of hierarchy of consequences
- Supervise closely during unstructured periods
- Avoid lecturing and criticism
- Model appropriate behavior
- Compliment positive behaviors
- Use behavior contract for one behavior at a time with appropriate reward
- Call on only when hand is raised
- Speak softly in non-threatening manner
- Provide leadership role opportunities
- Reinforce compliant behavior immediately and consistently
- Provide purposeful learning assignments
- Include high interest activities
- Practice verbally rehearsing the appropriate behavior
- Provide opportunity for practicing the appropriate behavior
- Use home-based consequences when possible
- Stick to set limits
- Directly verbalize expectations
- Plan ahead for new activities or unstructured events
- Be flexible
- Learn to increase structure
- Establish one goal at a time
- Give the student two choices to decide upon
- Avoid creating competitive situations and activities

Social:

- Increase contact by touch or name
- Structure interactions

- Promote acceptable social behavior
- Assign special responsibilities to boost self esteem
- Send positive notes home
- Train appropriate anger control
- Provide encouragement
- Teach social skills directly
- Foster acceptance of differences among peers

D. Student/Lawful Custodian Issues

Most students with ADHD will realize that they are coping with a lifelong condition. This involves learning to tolerate frequent clinic visits and medication adjustments. The student must also learn to handle related frustration, social, and behavioral concerns. It is difficult for the student to express innate inability to control himself or herself according to classroom expectations. This, coupled with discipline referrals and academic failure, greatly influences the development of the student's self esteem. The impact of ADHD on the student's educational performance varies from mild to extreme and should be considered on an individualized basis.

Students with ADHD may have great difficulty complying with lawful custodian (parental) instructions. The lawful custodians, in return, become frustrated trying to manage their student's behavior effectively. Homework becomes an issue of concern due to failure to complete the assignment within a reasonable amount of time and with reasonable effort. Supervision also becomes an issue due to the student's impulsivity and poor judgment. Other unusual demands may be placed upon the lawful custodians and siblings of students with ADHD depending on the characteristics exhibited. This may result in high levels of family stress. Support groups, behavioral consultation, and counseling are interventions noted to assist families with these related concerns.

III. Summary

It is likely that students with ADHD will remain subjects of concern in the schools. School interventions are important in the management of these students. Students who are taking medications will need ongoing monitoring for response to the medication as well as monitoring for side effects. The importance of the family cannot be under estimated in terms of the need for consistent follow through and reinforcement. It is important that the family, school, and primary health care provider work in a coordinated fashion. Also, it may be helpful to the school nurse and other school staff to be aware to know what teaching strategies work best for the student.

NOTES

1. Information in this section has been adapted from:

Culbert, T.P., Banez, G.A., and Reiff, M.I. (1994). "Children who have attentional disorders: Interventions." *Pediatrics in review.* 14, 5-15.

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